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20 October 1992

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Federal Communications Commission
Office of the Secretary

Office of the Secretary
Federal Communications Commission
Room 222
1919 M St., N. W.
Washington, DC 20554

Enclosed are the comments of Silicon Graphics, Inc., on Docket 92-152. An original and nine copies are included.

Sincerely,

David M. Hanttula

David M. Hanttula
Manager
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Interactive Systems Division
Visual Systems Group
Silicon Graphics, Inc.

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List A B C D E

Before the
Federal Communications Commission
Washington, DC 20554

In the matter of

Revision of Part 15 of the Rules to harmonize the standards for digital devices with international standards.	))))	Notice of Proposed Rulemaking; request for comments. Docket No. 92-152

Comments
of

Silicon Graphics, Inc.
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19 October 1992

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Before the
Federal Communications Commission
Washington, D.C. 20554

In the matter of

Revision of Part 15 of the Rules to harmonize the standards for digital devices with international standards	))))	Notice of Proposed rulemaking; request for comments. Docket No. 92-152

Silicon Graphics, Inc., (SGI) pursuant to the FCC's Notice of Proposed Rulemaking, request for comments ("Notice") released on July 30,, 1992, hereby submits its Comments in the above-captioned matter.

Silicon Graphics, Inc., is a leading supplier of visual computing systems to the international marketplace. SGI manufacturers systems which are compliant with national and international regulatory requirements. SGI's products are a mix of RF emission Class A and Class B systems. SGI performs a significant amount of "duplicate" radiated emissions testing due to differing emission limits and test methodologies between FCC Rules Part 15 for digital devices and International Electrotechnical Commission (IEC) CISPR Publication 22, *Limits and methods of measurement of radio interference characteristics of information technology equipment* (CISPR 22).

SGI is interested in, and supports, harmonized international standards and technical requirements whenever possible. SGI's staff has commented in previous FCC proceedings regarding harmonization of Part 15 digital device electromagnetic emission limits and test methods with those of CISPR 22.

SGI markets one version- an international version, of each product. We cannot economically manufacture different products for different regions of the world. SGI products are the sum of all world-wide regulatory requirements. Currently, Class B products must be tested twice, at different separation distances between antenna and equipment under test (EUT) to demonstrate compliance with both FCC Part 15 limits and CISPR 22 limits. This has the effect of doubling test time and cost, not only for final compliance testing but also during the test and debug phase of the product's development. This is very inefficient and costly for digital device manufacturers and may place some small manufacturers with limited financial and technical resources at a competitive disadvantage and tend to limit competition with larger foreign manufacturers. Monies spent for duplicate testing could better be used to develop new products, making United States manufacturers more competitive in the world marketplace.

SGI supports harmonization of FCC Rules Part 15 digital device emission limits with those of IEC CISPR Publication 22. The FCC's intent to accept compliance with CISPR 22 limits as compliance with the FCC's digital device emission requirements is a sound approach.

SGI recommends that the CISPR 22 AC powerline conducted emission limits be adopted as presently published in the 1985 edition of CISPR Publication 22.

SGI recommends that the CISPR 22 radiated emission limits and test methods as published in the 1985 edition of CISPR 22 be adopted from 30 to 1000 MHz and that above 1000 MHz the FCC Part 15 digital device emission limits and test methods shall apply.

A summary of FCC Part 15 and CISPR 22 emission limits are attached. Included are composite FCC/CISPR 22 radiated emission limits. SGI recommends that the FCC adopt the IEC practice of "rounding off" the numerical value in dBuV/m. This data is presented in the table "Recommended FCC Part 15 International Harmonized Limits".

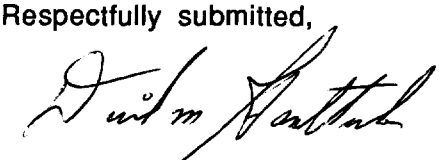
Further, SGI requests that emission limit values be published in FCC Rules as dBuV/m (decibles above one microvolt per meter) for radiated emissions and dBuV for conducted emissions. These units are the internationally accepted of RF field strength and conducted emissions voltage amplitude. These units are those displayed by most test receivers for signal amplitude. It is noted the FCC already accepts these units in compliance test reports. The use of these terms and the rounding off of decible values will eliminate much confusion as to the actual value of the limit, will simplify limit compliance calculations and minimize report preparation time and errors.

The CISPR test methods, in addition to the emission limits, must also be adopted to minimize the amount of testing required. If the CISPR 22 test methods are not adopted, there is no significant advantage to manufacturers. Specifically, we urge that the CISPR 22 test distance of ten meters for Class B limits be adopted. The primary cause of double-testing of products is the present FCC Class B distance of 3 meters and the CISPR 22 test distance of 10 meters. (The original model used in determining FCC emission limits for Class B devices was based on a 10-meter separation distance between source and receiver). SGI recommends that FCC test methods (but at a distance of 10 meters) be used above 1000 MHz.

SGI recommends that the FCC adopt new editions of CISPR 22 as these are published by the IEC. This will provide international harmonization limit and test method continuity and minimize confusion for manufacturers and the test industry. Hopefully, this can be accomplished with a public notice and not a notice of proposed rulemaking to make the process more efficient and eliminate a bureaucratic, time-wasting process when it may not be necessary.

Last, SGI requests that the FCC adopt CISPR 22 limit and test methodology quickly and without significant delays until the Final Report and Order. We believe this is a very popular subject and we feel it should meet with no, or minimal, objection. If the Commission can administratively begin to accept CISPR 22 limits and test methods before the Final Report and Order, they should do so immediately. Double-testing is a significant financial burden for many manufacturers and should be eliminated as quickly as possible. SGI estimates the cost of double testing over a six month period can cost a manufacturer $80,000.

Respectfully submitted,



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FCC RULES PART 15 DIGITAL DEVICE LIMITS 10/1/92

CLASS A CONDUCTED LIMITS		CLASS B CONDUCTED LIMITS	
0.45 - 1.705 MHz	60 dBuV	0.45 - 30 MHz	48 dBuV
1.705 - 30	70		

RADIATED LIMITS	CLASS A	CLASS B	
	10 m	3m	10 m*
30 - 88 MHz	39 dBuV/m	40 dBuV/m	29.54 dBuV/m
88 - 216	43.5	43.52	33.06
216 - 960	46.4	46.02	35.56
960 - 1000	49.5	53.98	43.54
above 1000	49.5 ave/69.5 pk	53.98 ave/73.98 pk	43.54 ave/63.54 pk

*extrapolated using a 10.54 dB correction factor for 3 m to 10 m distance change.

CISPR PUBLICATION 22 (1985) LIMITS

CLASS A CONDUCTED LIMITS			CLASS B CONDUCTED LIMITS		
0.15 - 0.5 MHz	79 QP	66 AVE	0.15 - 0.5 MHz	66 - 56 QP	56 - 46 AVE
0.5 - 30	73	60	0.5 - 5	56	46
			5 - 30	60	50

RADIATED LIMITS	CLASS A	CLASS B	
	30 m	10 m**	10 m
30 - 230	30 dBuV/m	39.54 dBuV/m	30 dBuV/m
230 - 1000	37	46.54	37

**extrapolated using 9.54 dB correction factor for 30 m to 10 m distance change

COMPOSITE FCC PART 15/CISPR 22 LIMITS

CONDUCTED: USE LIMITS AS SPECFIED IN CISPR PUBLICATION 22.

RADIATED:	CLASS A	CLASS B
	10 m	10 m
30 - 230 MHz	39.5 dBuV/m	29.5 dBuV/m
230 - 1000	46.5	35.5
above 1000	49.5 ave/69.5 pk	43.5 ave/63.5 pk

RECOMMENDED FCC PART 15 INTERNATIONAL HARMONIZED LIMITS

CONDUCTED: USE LIMITS AS SPECFIED IN CISPR PUBLICATION 22.

RADIATED:	CLASS A	CLASS B
	10 m	10 m
30 - 230 MHz	40 dBuV/m	30 dBuV/m
230 - 1000	47	37
above 1000	50 ave/70 pk	44 ave/64 pk